

Proengin



AP4C

THE UNIVERSAL CHEMICAL DETECTOR



BR AP4C 01 US

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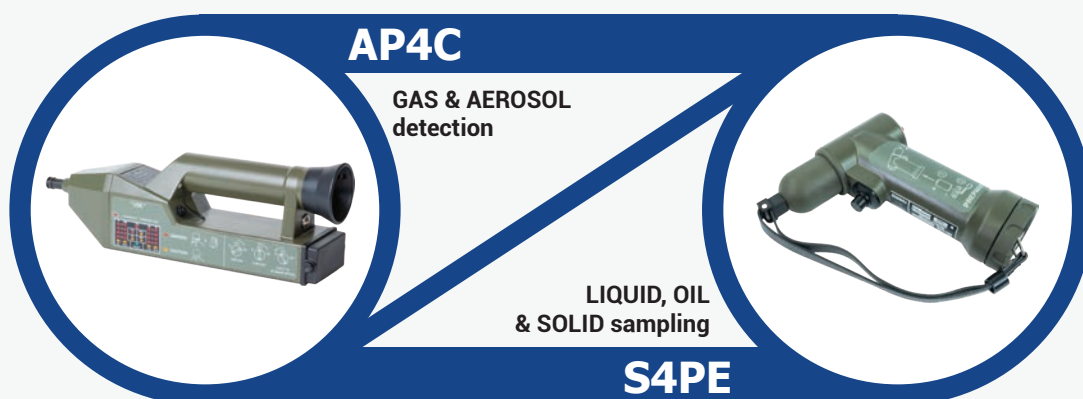
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The AP4C is a portable chemical contamination control kit used to detect hazardous chemical substances in the form of gas, aerosol, and liquid. Some powder and solid can also be sampled. It is designed to detect and control the presence of:

- **Chemical Warfare Agents (CWA - Chemical weapon convention OPCW Schedule 1);**
- **Fourth-generation and nontraditional agents such as Novichoks;**
- **Chemical weapon precursors (e.g. DF, QL, Chlorosarin, Chlorosoman, etc.);**
- **Homemade and impure terrorist agents (e.g. the 30% concentrated Sarin used in 1995 in the Tokyo subway);**
- **Toxic Industrial Chemicals and Toxic Industrial Materials (TICs - NATO ITF 25) such as cyanides, organophosphate, ammonia, acids, and many hazardous chemicals commonly used by the industry**
- **PBAs (Fentanyl and others Opioids)**

It is composed of two main pieces of equipment:



The AP4C detector used as a standalone unit to detect chemical warfare agents and toxic industrial materials in the form of gas, and aerosols agents.

The S4PE sampling device used with the AP4C. The S4PE modifies the state of a chemical substance from liquid/solid to gas.

Detection results are indicated within seconds via four bargraphs (or channels) on the AP4C display:

- Phosphorus (P) channel
- Hydrogen-Nitrogen-Oxygen bond (HNO) channel
- Arsenic (As) channel
- Sulfur (S) channel

An additional channel (CH light on the display) indicates the presence of a potential flammable environment. Moreover, the AP4C is designed to be used in flammable environment. The AP4C is well suited to quickly check suspicious areas, contaminated objects, operators, or victims.

Gas, aerosol, liquid and solid detection

Having the ability to collect and vaporize low volatile chemicals is critical because there is no such thing as “nerve gas” or “mustard gas.” The majority of chemical weapons exist in the state of oily liquids with low vapor pressure which means that they don’t emit much vapor. For instance, the vapor pressure of water at 25°C is 24 mmHG as opposed to 3 mmHG for Sarin “gas,” 0.1 mmHG for mustard “gas,” and 0.0008 mmHG for VX. Furthermore, lower temperature reduces the volatility of these agents even more and prevents adequate detection on the field. Therefore, the most potent nerve and blister agents are hard to detect under the form of vapor.

Fortunately, the AP4C kit comes with two main pieces of equipment: the AP4C main detector and the SP4E sampler used to collect and vaporize chemicals under the form of liquids and solids. The AP4C detector can be used as a standalone detector to monitor gas and aerosol hazards while the S4PE allows to collect and vaporize liquids and solids in front of the AP4C air intake. This 2 in 1 system is made possible by the unique characteristics of the AP4C technology.

Standalone **AP4C** detector for gas and aerosol detection



AP4C detector and **S4PE** sampler for liquid and solid detection





Step #1: Apply the tip of the S4PE sampler on the suspicious liquid or solid substance to collect the chemical. Sampling can be taken directly from objects, surfaces, and skin of the victims



Step #2: Insert the tip of the SP4E sampler inside the AP4C intake tube. Then pull the trigger of the S4PE sampler to vaporize the collected sample. Chemical vapor coming out of the heated sample is detected by the sensor.



The AP4C can be used for a broad range of CBRN and HAZMAT applications.



CBRN

The mil-specs AP4C can detect a wide range of chemical warfare agents including the most persistent types such as Sarin, VX, Mustard, Lewisite, and Novichoks. Simply use the S4PE probe to vaporize any suspicious substance when cold temperature or low vapor pressure inhibits the volatility of the agent.



HAZMAT

The AP4C is not limited to chemical warfare scenario and the four channels of detection allows to pick up a vast range of Toxic Industrial Materials (TIMs) and Toxic Industrial Compounds (TICs) such as Ammonia, Sulfur dioxide, Arsine, Phosphine, Methyl isocyanate, and Hydrogen cyanide, and PBAs, just to name a few.



DECONTAMINATION & MEDICAL USE

Thanks to its quick response and fast clear out time, the AP4C is especially suitable for mass-decontamination operations. Post-shower operators, victims headed for medical triage, or sensitive assets can be checked with the S4PE device. Sample can be taken directly on the skin if necessary.



NON-TRADITIONAL THREATS

Unlike other technologies, flame spectrometry used by the AP4C doesn't rely on a detection library. The AP4C is able to detect an unlimited number of new and emerging threats such as impure homemade substances, fourth-generation chemical weapons (eg. Novichok), and binary agents.

The AP4C kit is especially useful for the following situations:



CHEMICAL TERRORISM

The Sarin terrorist attack in the Tokyo subway in 1994, the VX assassination of a North Korean national in Kuala Lumpur airport in 2017, and the recent Novichok poisoning of several individuals in UK represents challenging situations for first responders. These agents were not easily detectable due to the impurity, crude release form, and lack of known chemical footprint. But the AP4C is designed to detect that type of threat thanks to the unique flame spectrometry technology which is not based on any library but detects basic atoms instead.



HAZMAT & DECONTAMINATION

Industrial disaster, transportation accident, and other HAZMAT incident represents complex and dynamic situation. The fast response and quick clear out time of the AP4C sensor helps to speed up the hot zone operations including initial demarcation and decontamination procedure. The S4PE probe permits to sample liquids and low vapor pressure agents, including directly of the victim's skin. Finally, the unlimited detection range allows to detect a great number of chemicals even in difficult conditions (mixture, high or low temperature, high humidity).



GAS, AEROSOL & LIQUID DETECTION

Chemical threats exist in various forms and states. Some toxic substances seldom present a vapor hazard unless exposed to warm temperature while other are highly volatile even in cold environment. As a stand-alone detector, the AP4C detects gas, and aerosols. But with the help of the S4PE, the AP4C kit becomes a 2 in 1 system capable of sampling liquids, oily substances as well as some solids as long as they stick to the scraper and can be vaporize by the S4PE.



CHEMICAL WARFARE

Virtually all Nerve and Blister agents contain atoms detected by the AP4C, either Phosphorus (organophosphate nerve agents), Sulfur (blister agents), or HNO bonds (nitrogen blister and carbamate agents). Persistent chemical weapons such as VX, Mustard, and Lewisite emit very little vapor at room temperature. The only solution is to sample the suspicious area or substance with the S4PE probe. Finally, recent field experience shows that chemical weapons often appears as rather crude mixture. Fortunately, the AP4C sensor is designed to detect basic elements without being sensitive to impurities and side products.

KEY FEATURES



Gas, aerosol, solid, and liquid detection.



No library. Unlimited detection range.



Medical use. Contamination check of the skin.



Ruggedized and weatherproof



Designed for military use. EMI resistant.



Easy to use, fully automatic.

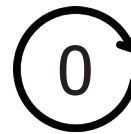
PERFORMANCE



Fast startup time (2 minutes at room temperature).



Quick response time (2 seconds average).



Quick clear out time.



High sensitivity, sub-ppm range.



No filters or field calibration required.



Simultaneous and continuous detection.

Unlimited range of detection

The AP4C technology is not limited by a library because it searches for basic chemical elements instead of trying to get an exact match on a particular molecule. Therefore, the AP4C can detect unknown agents, impure chemical weapons, homemade terrorist mixtures, precursors and binaries, as well as non-traditional agents such as Novichok.

Detection of vapor, liquid, and solids

Low vapor pressure liquid, oily substance, powders and contaminated dust can be collected and vaporized with the help of S4PE the sampler. Therefore, the AP4C system is able to detect threats in a great variety of forms: vapor from industrial chemicals, oily chemical warfare agents, opioid and Fentanyl powders, and unknown substances found in homemade terrorist agents.

Quick start-up and response time

In the HAZMAT and CBRN business, saving time is critical. The detector starts in 2 minutes at room temperature and the response time is almost instantaneous. The sensor also clears out quickly after a positive detection making the AP4C an ideal tool to set up the hot zone and handle time sensitive tasks such as victim decontamination.

Easy to use, automatic, and hassle free

Designed for field use, the AP4C takes the complexity out of the equation: one single ON/OFF button, no settings or menu, no field calibration and filter to be changed. The entire detection process is completely automatic and requires no action from the user.

Simultaneous and continuous detection

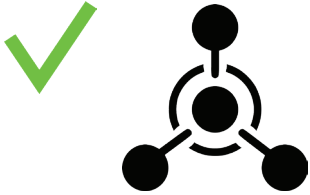
Unlike other technologies, each detection channel is independent and can detect simultaneous threats or mixed chemicals in real time. The sensor is also capable of performing detection continuously without having to recover from a previous alarm. For instance, a low concentration of nerve agent indicated on the display, doesn't prevent the detection of another round of incoming blister agent or toxic industrial chemical. This feature is critical in complex and dynamic situations when the operator doesn't have the opportunity to leave the hot zone or wait for the system to clear out.

Robust and weather proof

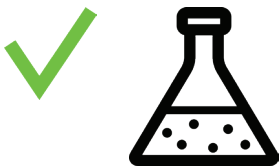
Designed to meet military requirements, the AP4C can operate under challenging conditions such as extreme temperature and high rate of humidity. The AP4C technology is not affected by environmental conditions.



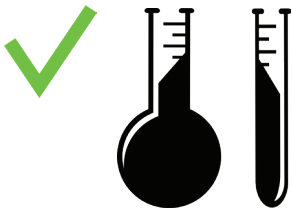
DO'S



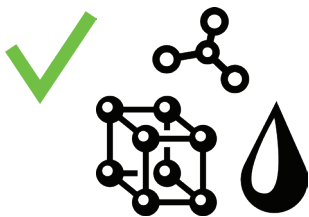
Chemical weapons & NTA



Toxic industrial chemicals (TICs & TIMs)

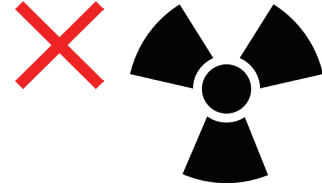


Precursors, Binaries, & Homemade



Gas & Liquid detection

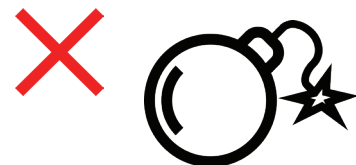
DON'TS



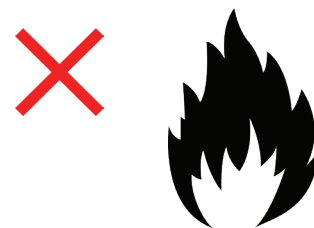
Ionizing radiation



Biological



Explosives



Explosive Environment
& LEL

Nerve agents

Recent history shows that chemical terrorism sponsored by states or extremist groups used impure and uncommon variant of agent to commit act of terror or murder. Nerve agents are organophosphate ester derivatives of phosphoric acid that contain phosphorus (G agents) and sulfur (V agents). Therefore, the AP4C can detect all nerve agents including derivatives and structural variants of well known chemical weapons belonging to this family. The table below indicates the most common type of nerve agents detected by the AP4C but this list is not exhaustive and additional agents can be detected.

NERVE AGENTS DETECTED BY THE AP4C			
Class	Agent	Volatility & best detection route	Note
Nerve (G)	Tabun - GA	Low / Detection with AP4C	First discovered nerve agent
Nerve (G)	Sarin - GB	Medium / Detection with AP4C	Most volatile G agent
Nerve (G)	Soman - GD	Medium / Detection with AP4C	
Nerve (G)	Cyclo-sarin - GF	Low / Detection with AP4C	
Nerve (G)	Ethyl sarin - GE	Low / Detection with AP4C	90% as toxic as Sarin
Nerve (V)	VX	Very low / Detection with AP4C and S4PE sampler	
Nerve (V)	Amiton - VG	Very low / Detection with AP4C and S4PE sampler	VX family, 1/10 toxicity of VX
Nerve (V)	VE	Very low / Detection with AP4C and S4PE sampler	Possible second generation Russian VX
Nerve (V)	VS	Very low / Detection with AP4C and S4PE sampler	Structurally very similar to VX
Nerve (V)	Edemo - VM	Very low / Detection with AP4C and S4PE sampler	Related to VX
Nerve (V)	Substance 33 - VR	Very low / Detection with AP4C and S4PE sampler	Russian version of VX
Nerve (V)	EA 3148	Very low / Detection with AP4C and S4PE sampler	Russian version of VX, deadlier than VR
Nerve (GV)	GP	Low / Detection with AP4C	Slightly less toxic than VX
Nerve (GV)	EA 5488	Low / Detection with AP4C	Less than one half as toxic as VX
Nerve (GV)	GV1	No data	Less than one half as toxic as VX
Nerve (GV)	GV2	No data	About 1/10 as toxic as VX
Nerve (GV)	GV3	No data	About 1/20 as toxic as VX
Nerve (GV)	EA 5414	Low / Detection with AP4C	About 1/5 as toxic as VX
Nerve (GV)	GV5	No data	About 1/20 as toxic as VX
Nerve (4th generation)	Novichok agents A-230, A-232, A-234	Very low / Detection with AP4C and S4PE sampler	Presumably deadliest nerve agents Possibly 5 to 10 times stronger than VX
Binary Precursor	QL (also EDMP)	Low / Detection with AP4C	Mix with NE/NM sulfur to form VX
Binary Precursor	DF	High / Detection with AP4C	Mix with OPA to form Sarin
Binary Precursor	OPA	High / Detection with AP4C	Mix with DF to form Sarin

Sources:

- *Handbook of Chemical and Biological Warfare Agents 2nd Edition* - D. Hank Ellison
- *Compendium of Chemical Warfare Agents* - Steven L. Hoenig
- U.S. Army FM 3-11.9

Blister, blood, and other agents

Similarly to nerve agents, blisters are chemical compounds with low volatility and vapor pressure. Vapor and aerosol can be picked up by the AP4C but the S4PE collector is more suitable to sample persistent blister agents. The table below indicates the most common type of blister agents detected by the AP4C but this list is not exhaustive and additional agents can be detected.

BLISTER, BLOOD, & OTHER AGENTS DETECTED BY THE AP4C			
Class	Agent	Volatility & best detection route	Note
Blister	Distilled mustard - HD	Low / Detection with AP4C and/or S4PE sampler	
Blister	Mustard gas - H	Low / Detection with AP4C and/or S4PE sampler	Undistilled with 30% sulfur impurities
Blister	O-Mustard - T	Very low / Detection with AP4C and S4PE sampler	Bis-(2-chloroethylthio)ethyl ether
Blister	Nitrogen Mustard - HN1	Low / Detection with AP4C and/or S4PE sampler	
Blister	Nitrogen Mustard - HN2	Low / Detection with AP4C and/or S4PE sampler	
Blister	Nitrogen Mustard - HN3	Very low / Detection with AP4C and S4PE sampler	
Blister	Sesqui mustard - Q	Very low / Detection with AP4C and S4PE sampler	Solid below 14°C
Blister	Lewisite - L1 (also L)	Low / Detection with AP4C and/or S4PE sampler	
Blister	Lewisite - L2	Low / Detection with AP4C and/or S4PE sampler	
Blister	Lewisite - L3	Low / Detection with AP4C and/or S4PE sampler	
Blister	Mustard Lewisite mixture - HL	Low / Detection with AP4C and/or S4PE sampler	37% HD and 63% L mixture
Blister	Sulfur Mustard Mixture - HT	Low / Detection with AP4C and/or S4PE sampler	60% HD and 40% T mixture
Blister	Phosgene oxime - CX	High / Detection with AP4C	
Blister	Diphenylchloroarsine - PD	Low / Detection with AP4C and S4PE sampler	Also acts as a vomiting agent
Blister	Ethylchloroarsine - ED	Medium / Detection with AP4C	
Blister	Methylchloroarsine - MD	Medium / Detection with AP4C	
Blood	Hydrogen cyanide - AC	High / Detection with AP4C	
Blood	Arsine - SA	Very High / Detection with AP4C	Also used by industry (TICs & TIMs)
Blood	Cyanogen chloride - CK	Very High / Detection with AP4C	
Vomiting	Adamsite - DM	Very low / Detection with AP4C and S4PE sampler	Reportedly mixed with DC
Vomiting	Diphenylchloroarsine - DA	Very low / Detection with AP4C and S4PE sampler	Reportedly mixed with DA or PD
Vomiting	Diphenylcyanoarsine - DC	Very low / Detection with AP4C and S4PE sampler	Reportedly mixed with DM or PD
Incapacitant	BZ	Very low / Detection with AP4C and S4PE sampler	May induce vivid hallucinations as it sedates the victim

Sources:

- *Handbook of Chemical and Biological Warfare Agents 2nd Edition* - D. Hank Ellison
- *Compendium of Chemical Warfare Agents* - Steven L. Hoenig
- U.S. Army FM 3-11.9

Toxic industrial chemicals (TICs & TIMs)

Everyday, thousands of tons of chemicals are produced, transported, and stored all around the world. Many of these chemicals are highly toxic, in fact the first chemical agents used during WWI were nothing more than compounds routinely used in civilian applications. Despite safety protocol and regulation, industrial and transportation accidents do happen on a regular basis. Moreover, toxic industrial chemicals (TICs) have been the terrorist's weapon of choice because of the difficulties in obtaining and manufacturing chemical weapons. Therefore, several nations and NATO listed dozens of toxic chemicals which could be diverted for terrorist use. The table below shows the products listed by the NATO International Task Force (ITF 25 list) that can be detected by the AP4C. Additional TICs can be detected.

TOXIC INDUSTRIAL CHEMICALS (NATO IFT 25 list) DETECTED BY THE AP4C

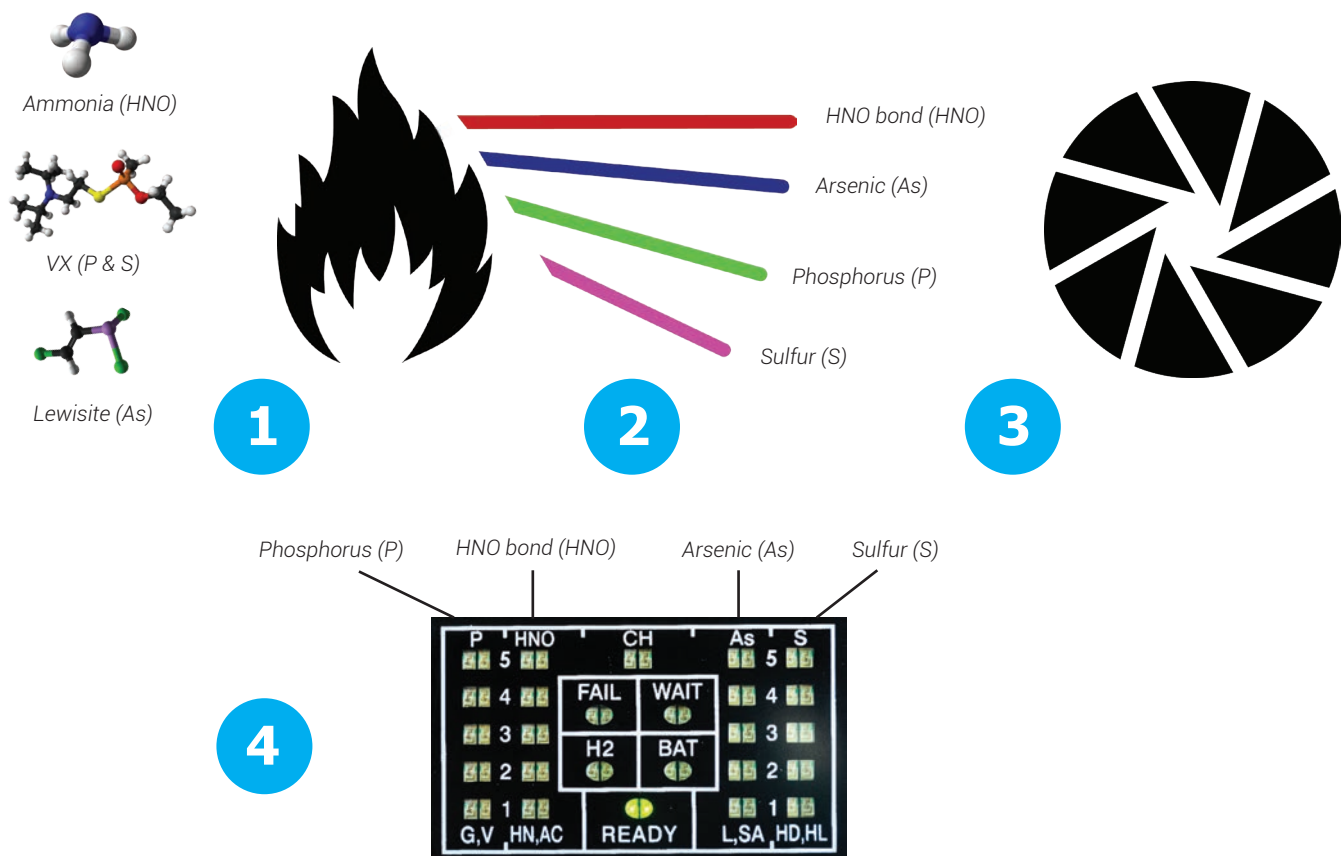
Ammonia	Nitrogen dioxide
Arsine	Phosphine
Carbon disulfide	Phosphorus pentafluoride
Hydrogen cyanide	Sulfur trioxide
Hydrogen sulfide	Sulfuryl chloride
Nitric acid	Tert-octyl mercaptan
Phosphorus trichloride	Allyl isothiocyanate
Sulfur dioxide	Arsenic trichloride
Acetone cyanohydrin	Cyanogen
Acrylonitrile	Diphenylmethane-4'-diisocyanate
Allylamine	Ethylene imine
Carbonyl sulfide	Ethyl phosphonothioic dichloride
Chloroacetonitrile	Ethyl phosphonous dichloride
Chlorosulfonic acid	Isopropyl isocyanate
1,2-dimethylhydrazine	Parathion
Dimethyl sulfate	Perchloromethyl mercaptan
Methanesulfonyl chloride	N-butyl isocyanate
Methyl hydrazine	Sulfuryl fluoride
Methyl isocyanate	Tert-butyl isocyanate
Methyl mercaptan	Tetraethyl pyrophosphate
N-butyl isocyanate	Toluene diisocyanate (TDI)

The AP4C uses the flame spectrometry technology (FPD) to detect three atoms and one bond:

- **Phosphorus atom (P)**
- **Hydrogen-Nitrogen-Oxygen bond (HNO)**
- **Arsenic atom (As)**
- **Sulfur atom (S)**

WHAT IS FLAME SPECTROMETRY?

A continuous stream of air flows through a hydrogen flame exciting the elements. Each element then emits light at a specific point in the light spectrum and is analyzed. Phosphorus, HNO (bond), Arsenic, Sulfur, Potassium, Sodium, Calcium and many other elements can be detected from any complex gas, aerosol or dust particle through this method.



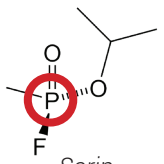
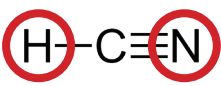
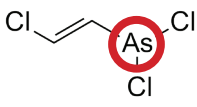
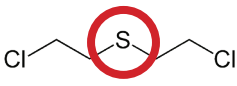
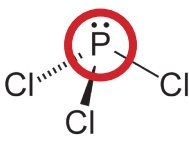
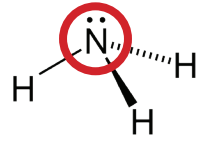
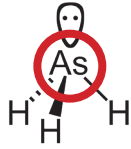
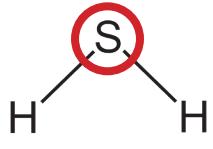
1. Chemicals containing some of the elements detected by the sensor burn in the hydrogen flame;
2. As they burn, the detectable elements emit a unique light spectrum and change the color of the flame;
3. A photo-sensor located next to the burner captures the light spectrum coming out of the flame;
4. A processor analyses the data coming out of the sensor and indicates the results on the display. Each bargraph (or channel) shows the type of element detected (P, HNO bond, As, S) and the relative concentration of the chemical.

WHY USING FLAME SPECTROMETRY TECHNOLOGY?

- Detection is almost instantaneous: as each toxic molecule is sampled in the flame, it reacts immediately giving off light.
- Because this technology search for basic chemical elements, it is not limited by a library. Therefore, the AP4C can detect unknown agents, impure chemical weapons, homemade terrorist mixtures, precursors and binaries, as well as non-traditional agents such as Novichok.
- Detects gas, aerosols, liquid and encapsulated agents. Also detects certain solids if they can be vaporized and reach the sensor.
- Chemical elements have unique light spectrum, hence there is virtually no false positive detection with flame spectrometry
- There is very little memory effect, even at high concentrations. Fast clear out time.
- All elements can be detected simultaneously because they emit different light color/spectrum.
- Detection channels are independant from one another. Several chemicals can be detected simultaneously.
- Utilizes an open sensor (i.e. no membrane) which means no retention of toxic agents, fast response and decay time, less maintenance.
- The heat from the flame helps to decontaminate the internal surfaces which also assists in a fast return-to-zero-time.
- Unaffected by heat, cold, and humidity

THE UNIVERSAL DETECTOR

- The AP4C is a universal chemical detector that does not identify any particular molecule or substance. It only detects four key elements - 3 atoms and 1 bond - which are present in the majority of chemical warfare agents and many hazardous materials.
- Therefore, the AP4C will detect chemicals containing one of these four elements (P, HNO bonds, As, S).
- Finally, the detector will not pick up other chemical substances which don't contain these elements.

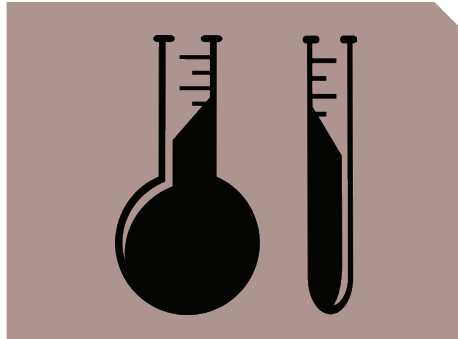
	DETECTION CHANNELS OF THE AP4C			
	PHOSPHORUS (P)	HNO bond (HNO)	ARSENIC (As)	SULFUR (S)
Chemical Warfare Agents	 <i>Sarin</i>	 <i>Hydrogen Cyanide</i>	 <i>Lewisite</i>	 <i>Mustard "gas"</i>
Toxic Industrial Materials	 <i>Phosphorus trichloride</i>	 <i>Ammonia</i>	 <i>Arsine</i>	 <i>Hydrogen Sulfide</i>

*This table illustrates the detection process of selected chemicals.
The AP4C technology searches for basic atoms/bonds in the molecule.*



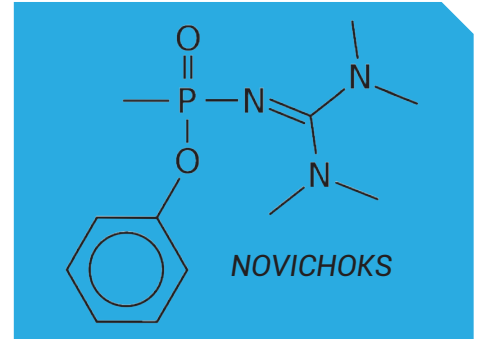
CHEMICAL WEAPONS

Nerve, blood, and blister agents.



PRECURSORS & BINARIES

DF, QL, Chlorosarin, Chlorosoman, etc.



NONTRADITIONAL AGENTS

Novichoks and fourth-generations chemical weapons.

**The 4 detection channels
allow to detect a wide range
of threats**



TOXIC INDUSTRIAL CHEMICALS

Hazardous chemicals commonly used by the industry such as cyanides organophosphate, ammonia, acids, etc.



HOMEMADE & TERRORIST AGENTS

Impure agents, mixed agents, binary agents/acid gas reactions.



FENTANYL & OTHER OPIOIDS

Certain synthetic drugs can be detected with the help of the S4PF sampler.

6

Specifications

- **Technology:** Flame spectrometry
 - **Detection range:** Unlimited, CWA, TICs & TIMS, NTAs, Novichoks, binaries, opioids & Fentanyl
 - **Detection form:** Gas, aerosol, liquid, powder and solid
 - **Sensitivity:** sub-ppm range
 - **Type of alarm:** visual on display and optional audio alarm
 - **Operating temperature:** -25°F to 122°F / -32°C to +50°C
 - **Storage temperature:** -38°F to 160°F / -39°C to +71°C
 - **Communication:** RS-422 interface
 - **Data storage:** Internal memory, 530 hours loop recording
 - **Powers supply:** lithium or rechargeable battery
 - **Battery (LSH20):** 24 hours at room temperature
- Hydrogen runtime:** 12 hours per hydrogen cylinder. Cylinder can easily be changed on the field.



PROENGINE offers the following AP4C bundles. Each kit is fully functional out of the box and doesn't require additional parts or accessories to get started.



UC AP4C - Part # M910 E00 003

This kit contains everything needed to perform advanced CBRN and HAZMAT work. It comes with the SP4E liquid sampler, scrapers, spare batteries and hydrogen cylinders. It is our most popular and best-selling option: versatile, powerful, and combat proven.



AP4C DECON - Part # M910 E00 001

Geared for power users or full scale event usage, this bundle packs two SP4E liquid samplers, additional batteries, more scrapers, and extra nozzles. Designed for full event usage from initial detection through to decontamination work such as victim triage, asset clearing, and post decontamination check.



AP4C BASIC - Part # M910 E00 002

The budget conscious bundle comes with the minimum items needed to operate an AP4C kit. This is a popular option for those AP2C customers looking to upgrade to the AP4C. Note that the SP4E liquid/solid sampler is not included in this kit.

Main content and features of the bundles

UC AP4C

M910 E00 003

READY TO USE
OUT OF THE BOX



GAS & VAPOR
DETECTION



LIQUID
SAMPLING



TWO HYDROGEN
CYLINDERS



EXTRA BATTERIES

EXTRA S4PE
& SCRAPERS

EXTRA NOZZLES

BEST FOR

Regular HAZMAT
& CBRN unit

AP4C DECON

M910 E00 001



Advanced HAZMAT
& CBRN unit and/or
heavy decontamination
work

AP4C BASIC

M910 E00 002



Budget conscious
HAZMAT & CBRN unit
or unit upgrading from
AP2C



SIMTOOL KIT

The wireless SimTool system allows to connect up to 8 AP4C detectors in real time to receive detection and status information on a Windows computer or tablet. The operator can create a detection perimeters around a sensitive location or monitor a suspicious area from a safe distance. Alternatively, the user can generate simulated detection readings on the detector's display for training purpose. Up to 8 detectors can be triggered remotely via the tablet. Each detector, type of channel, and alarm strength can be triggered independently.



RECHARGEABLE BATTERY BLOCK

A rechargeable NiMH battery alternative of the standard lithium battery. Replaces the two LSH20 cells and the battery holder.



BATTERY CHARGER

Battery charger for the rechargeable NiMH battery.

Thousands of Proengin's AP4C systems are used in more than 70 countries all over the world by military forces, first responders, law enforcement agencies, CBRN specialists, HAZMAT teams, and border protection agencies. The majority of NATO countries and international organizations rely on the AP4C detectors to fulfill their missions. Our products are combat proven and have been deployed on many theaters over the past 30 years.

Here are some of our most notable countries using this unique solution: France, USA, Japan, India, Germany, UK, Canada, Sweden, Australia, Brazil, Israel as well as Austria, Argentina, Colombia, China, Denmark, Norway, Taiwan, Spain, Portugal, Italy, etc



10 Frequently asked questions

How can the AP4C detect unknown substances, non-traditional agents, and Novichok?

Because the AP4C technology looks for basic elements inside the chemical molecules. For instance, nerve agents are organophosphate containing Phosphorus (G agents) and Sulfur (V agents) which are the atoms detected by the AP4C. Essentially, the detector doesn't try to obtain an exact match of the entire molecule. It only detects one of its structural atom.

Is there a complete list of all the chemicals detected by the AP4C?

No, unlike other technologies that rely on library, the AP4C sensor is universal and can detect an unlimited number of chemicals. Its universality makes it the perfect tool for detection of a broad spectrum of threats.

How sensitive is the AP4C?

The sensitivity reaches the part per billion range for nerve agents.

Does the AP4C provide identification?

No, the AP4C detects and classifies threats on 4 channels based on their chemical composition. But thanks to its simultaneous detection capability the results are very quick, accurate and virtually without false alarm.

What is the S4PE sampler?

The S4PE sampler is an accessory designed to collect and then vaporize liquids and solids in front of the AP4C air intake.

Does the AP4C offer some sort of wireless communication and connectivity?

Yes, the SimTool kit and the bluetooth drawer enable connectivity features on the AP4C.

Can the AP4C detect Toxic Industrial Chemicals (TICs & TIMs)?

Absolutely, the AP4C can detect a wide range of industrial chemicals.

Can the AP4C be used in a flammable environment?

Yes, the AP4C can be used in a flammable environment. It is a flame-proof detector.

How can I integrate the AP4C in my operation?

Many customers use the AP4C at the beginning and at the end of a CBRN or HAZMAT event. The quick response time allows to scan a large area and give a fast initial alarm while the ability to sample liquids and persistent agents makes it ideal for decontamination purposes. Finally, the liquid and powder/solid sampling capability of the S4PE is especially useful for decontamination work such as decon checks or triage.

What is the difference between IMS and the AP4C technology?

IMS relies on preset and library of known molecules which means that an incoming threat must precisely match the profile of the molecule entered in the database. the AP4C technology presents numerous advantages:

- Simultaneous detection capability
- No filter
- Universal detection (No library)
- Performs in humid environment

Could I use the S4PE with my IMS detector to sample liquids and solids?

This approach would most likely saturate the IMS sensor and call for advanced technical maintenance to purge the chamber as IMS detectors are particularly vulnerable to memory effect and take time to recover after receiving large amounts of chemicals. We do recommend to use it instead with the AP4C that is a much more robust solution as the system purges itself naturally without the need for limiters and filters.

Does the AP4C detect biological agents?

No, the AP4C is a chemical detector and does not detect biological threats, explosives, and ionizing radiation. However, Proengin offers other systems (MAB, AP4C-VB, AP4C-FB) able to detect biological agents. Contact us for more information about our biological threat detection solutions.

Does Proengin offer extended warranty options upon initial acquisition?

Yes, several service plans and extended warranty options are available upon initial acquisition. These “peace of mind” options can be selected for several years. Contact us for more details.

Is the AP4C hard to use? How long does the training take?

The AP4C is probably one of the easiest detectors available on the market today. There is only a single ON/OFF switch and after that, the detection process is completely automatic. Training takes about one hour.





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